

**Abstract of the Disclosure**

A set of resistances for an exercise device such as a barbell or an exercise machine includes at least three different values of resistance. In one embodiment the resistances are weights distributed horizontally. The weights can have a binary distribution of resistances, such as one or more five pound weights, one or more ten pound weights, one or more twenty  
5 pound weights, one or more forty pound weights, and one or more eighty pound weights. A selector is used to select various combinations of the weights to obtain the desired total resistance. In one embodiment, a controller operates the selector to change the weights in response to a predetermined condition, such as momentary muscular failure or the occurrence  
10 of a manual change weight signal. The set of resistances is particularly useful for simplifying the automatic control of a weight stack, and for retrofitting existing machines and devices.